

Soil and Water Remediation, Groundwater/Vadose Zone (RL-0030)

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**100 N Area –
2905R Well House
Before and After**



Overview

This section addresses Project Baseline Summary (PBS) RL-0030, *Soil and Waste Remediation Groundwater/Vadose Zone*.

NOTE: Unless otherwise noted, all information contained herein is as of the end of September 2004.

Top FY 2004 Accomplishments

100-D Groundwater Treatment System: A new treatment system to remediate high concentrations of chromium was designed, built, and put into operation in 19 weeks (with zero injuries, zero accidents and no occurrences). The new system receives groundwater with chromium concentrations about 10 times greater than the other 100 Area pump-and-treat (P&T) systems and reduces the level of concentration to below detection.

Well Decommissioning: A total of 94 wells were decommissioned in FY 2004, bringing the total number of wells that FH has decommissioned to 146. The decommissioning of these wells eliminates a potential contamination pathway for recharge from the surface to the underlying aquifers.

Well Drilling: A total of 29 wells were drilled and completed for monitoring purposes in FY 2004. The majority of these wells satisfy Tri-Party Agreement (TPA) commitments for a compliant groundwater monitoring system for parts of the Hanford site. Soil, water, and air samples were collected from some of these wells to aid in understanding the distribution and movement of contamination; development of conceptual models; and enhancement of remediation systems.

Remediation of Groundwater: In FY 2004 over 1.3 billion liters of contaminated groundwater were treated by five P&T systems, bringing the total volume of treated groundwater to almost 9 billion liters. About 65 percent of this water was treated in the 100 Areas along the Columbia River; the other 35 percent was from the 200 West Area. The mass of contaminants removed in FY 2004 and the total to date are:

	<u>FY 2004</u>	<u>Total</u>
Carbon Tetrachloride	1,010 kg	86,770 kg*
Uranium	23.5 kg	203 kg
Technecium-99	12 g	114 g
Strontium-90	0.19 Ci	1.6 Ci
Chromium	34.9 kg	229.4 kg

* Total also includes mass removed by soil vapor extraction

Groundwater concentrations of technecium-99 and uranium have been below the remedial action objective (RAO) at the 200-UP-1 P&T throughout FY 2004. Shut-down of this system for a rebound study is planned for January 2005. Concentrations of chromium are near the RAO for the 100-H Reactor Area P&T. These systems are achieving the goal of protecting the river and sensitive ecological receptors.

100-D Automatic Chromium Analyzer: Funded through DOE's Advanced Monitoring Systems Initiative, the analyzer automatically samples aquifer tubes along the shoreline of the 100-D area, analyzes the water for hexavalent chromium, and telemeters the data to a computer which can be remotely accessed. The unit is completely self-contained, using solar panels for power. It requires minimal maintenance and has been delivering useful data since FH personnel assisted in its installation in July 2004.

Top FY 2004 Accomplishments, continued

Waste Sampling and Characterization Facility (WSCF): As part of the Waste Isolation Pilot Plant (WIPP) Program (which involves the collection and analysis of head space gas samples from Hanford transuranic [TRU] waste drums destined for final underground storage at the WIPP facility in New Mexico), WSCF is required to pass an annual audit to be certified for this analytical work. In addition, the lab also is required to participate in the Performance Demonstration Program (PDP) cycles, which requires successful analysis of a set of five gas samples of unknown composition. The results from all eight national labs participating in the WIPP PDP analyses are compiled in an annual report and a score card is issued. The report gave the WSCF Laboratory a perfect score of 100 percent pass for Cycle 18A of the PDP.

Notable September Accomplishments

Enhanced Access Penetration System Groundwater Well Installation: The Enhanced Access Penetration System (EAPS) is an innovative technology that combines cone penetrometer technology (CPT) with a rotary drilling system to dramatically increase the capabilities of a basic CPT rig. This system was developed at Hanford, through supplemental funding from DOE, specifically to access the subsurface and characterize carbon tetrachloride in the 200-W Area. After successful demonstrations there and further refinement of the system, Groundwater Remediation Program funded the EAPS technology to install a small-diameter groundwater well in the 100-D Area to better characterize one of the two hexavalent chromium plumes. This test was a success, reaching groundwater in approximately one day and installing a 1-inch-diameter polyvinyl chloride groundwater well in less than a day. This is the first of these types of wells to be installed on the Hanford Site, and this test and subsequent groundwater sampling have shown this to be a cost-effective alternative to traditional groundwater monitoring wells.

Water Lines Shutdown: The 100-D Area pressurized water lines were taken out of service, eliminating a potential mechanism for transport of chromium contamination from the soils to the groundwater. Approximately 13,275 feet or 2.5 miles of water piping has been removed from service, ranging in size from 1 to 12 inches in diameter.

WSCF: The old process vacuum system has been removed from service and the new process vacuum system was placed into service. This quarter the Lab received approximately 2,330 samples for analysis, performed approximately 2,930 analyses, and reported data for approximately 13,354 analytes.

FY 2004 FH Funds versus Forecast (\$M)

	FY 2004 Anticipated Funding w/Carryover	FY 2004 Fiscal Year Spend Forecast	Variance
Soil & Water Remediation, Groundwater/Vadose Zone	\$ 37.0	\$ 35.2	\$ 1.8

The projected spending variance reflects a reduction in the forecast spending combined with an increase in funding. The reduction in spending is a result of workscope delays that are now forecast to be carried over and performed in FY 2005. The \$750K increase in funding is associated with revised workscope for the expansion of the 100-KR-4 P&T system. The funding was received in late August and will also be carried over into FY 2005.

FY 2004 Schedule/Cost Performance (\$M)

	Budgeted Cost of Work Scheduled	Budgeted Cost of Work Performed	Actual Cost of Work Performed	Schedule Variance \$	Schedule Variance %	Cost Variance \$	Cost Variance %	Budget At Completion
Soil & Water Remediation, Groundwater/ Vadose Zone	\$35.5	\$35.4	\$35.2	-\$0.1	-0.3%	\$0.2	0.5%	\$35.5

Numbers are rounded to the nearest \$M and include the closure services allocation.

Schedule Performance: The schedule variance is within established thresholds.

Cost Performance: The cost variance is within established thresholds.

Performance Analysis FYTD and Monthly (\$M)

